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An Artist's  
History

-Joey Heinen

It is difficult to say if the popularity of portable video systems in the late 1960s was spurred by a need for what it could offer or if the Portapak in fact defined the artistic approaches and aesthetics of the pioneers of video art. As Hermine Freed put it,

"Portapak would seem to have been invented specifically for artists. Just when pure formalism had run its course; ...just when it became clear that TV communicates more information to more people than large walls do; just when we understood that in order to define space it is necessary to encompass time; just when many established ideas in other disciplines were being questioned and new models were proposed - just then the portapak became available."<sup>1</sup>

Artists were already taking this technology in their own hands, adapting and commenting on television before any such technology was put on the commercial market. The Sony CV2000 was the first Portapak on the market in 1968, originally intended for amateur use similar to Super and Regular 8. However, the constituency that took it up with the most vigor and vision were artists, specifically artists that were on the fringe and had little resources to work with.

Many artists and theorists have already talked about the significance of the Portapak within a broader context of spatio-temporal art, a synthesis of performance, sculpture, "happenings", and communal practice. Indeed, as the entire history of the moving image demonstrates, it is difficult to say that any technological development was born out of nothing, having no prototype or precursor to build off of, nor was the resulting invention necessarily used for its original purpose or by its intended audience. Many have also noted the seismic shift that simultaneously occurred in the contemporary art world along with the introduction of the Portapak to the commercial market, that of a need for a medium

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<sup>1</sup> Hermine Freed, "Where do we come from?, Where are we?, Where are we going" p. 210 in Ira Schneider and Beryl Korot *Video Art: An Anthology*

without history, that was financially accessible, and could announce itself to a broader audience while also critiquing the aims of corporate television. The Portapak has often been discussed as a major contributor in this history, but I would like to argue that it is paramount in diagramming a new paradigm in moving image history. It was the locus for a new sentimentality in moving image consumption, embodying a latent desire to democratize the moving image so that more and more people could have access to artistic expression and could be instantaneously replayed on one's own. Unlike Super 8 and other amateur film gauges which required the involvement of a processing lab, the entire production process was in the hands of the individual.<sup>2</sup> This ease-of-use and instant playback initially put aesthetic value in the back seat, but the evolution of increasingly more advanced portable VTR systems created an unforeseen and insatiable hunger for instant-playback video that could stimulate the eye as much as the mind.

Artists were intimately involved with Portapak since it was easy to use and fairly intuitive in its operation - many artists were quickly adept at manipulating video signals and altering playback perhaps due to the fact that Portapak was designed for amateur use and clearly articulated the basics of how video works. Television was almost an immediate means for corporate interests to force-feed their messages to the masses. The public television movement, also known as Electronic News Gathering (AntFarm, TTVT, Raindance, etc), was a direct response to this and echoed the use of the Portapak as a "blank canvas" for artists and the socially disenfranchised. Video synthesizers added on to the shelf life of a format that was quickly falling out of favor aesthetically, but artists were gradually becoming more bewitched with new effects, and rapidly growing demand for VTR

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<sup>2</sup> Mark Shapiro, *The History of Camcorders*

and advanced functionality wiped away 1/2 inch open reel in favor of more cost-effective, and aesthetically advanced video formats.

Portapak emerged during a specific moment in the history of media consumption and the emergence of a school of artists and activities bent on dismantling it. But as is the case with most mid-20th century technology, the Portapak was first designed for use by the military. The first Portapak prototypes were used by Vietnam soldiers as they flew over napalm bombing sites, ensuring that bombs had reached their intended targets. The tape recorders created by Ampex, the first systems that used electromagentic recordings on tape, were also originally connected to military use, having produced electric motors and generators for radars in World War II.<sup>3</sup> The first recordings for a moving image audience were developed in 1956, which eventually were adopted by the Television industry, replacing Kinescope systems with 2" Quad videotaping.<sup>4</sup>

Like the switch from Kinescope to Videotape in Television, some artists that were working with an early video mentality were originally using film. Howard Fried, a video artist in the California scene, recalls originally working with a Technicolor 1000 loop projector and Magi-cartridge automatic threading loop 8 mm, a "salesman's promotional media of choice before low-end video."<sup>5</sup> Even earlier than that, artists were working alongside engineers on televisions themselves.



Technicolor 1000 Loop Projector

<sup>3</sup> <http://history.sandiego.edu/GEN/recording/magnetic4.html>

<sup>4</sup> Report of the Library of Congress "A Report on the Current State of American Television and Video Preservation"

<sup>5</sup> Glen Phillips, *California Video: Artists and Histories* p. 90

The godfather of this practice is undoubtedly Nam June Paik who as early as 1962 was exhibiting work on "prepared televisions," working with the sync pulses which manipulated and stretched the image by introducing sound waves<sup>6</sup> or magnets. The specifics of how this actually functioned will be discussed later on, but the manipulation of television monitors was an important precursor to what initially sparked an impulse to work with video. It was also Paik who, according to legend, acquired the first Portapak on October 4th 1965, marked by a video that he took of the Pope on parade in New York City which was shown to an audience that night at Cafe-a-go-go.<sup>7</sup> Many contest this since Portapak, as already mentioned, was not on the commercial market until 1968, though some sources indicated that there were ways to obtain a Portapak as early as August of 1965. Obviously Paik was well acquainted with engineers such that it is possible that he got an advanced prototype. At any rate, what is known is that this work was shown that night in October - whether it was the work of a Portapak is unknown.



Example of a Nam June Paik prepared television

Paik's use of television-as-sculpture created waves almost instantly within certain circles of young artists. This practice of working with televisions was argued by artists at the time to be "an extension of the techniques of collage into the temporal and spatial dimensions provided by video monitors placed in an inter-textual dialogue with other materials."<sup>8</sup> A good example of this is Frank Gillette and

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<sup>6</sup> Douglas Davis, "Nam June Paik: The Cathode Ray Canvas" pp. 147-8

<sup>7</sup> Chris Meigh-Andrews, *A History of Video Art* p. 16

<sup>8</sup> Wolf Vostell, "De-collage/Collage: Notes Toward a Re-examination of the Origins of Video Art" p. 10 from Chris Meigh-Andrews

Ira Schneider's piece *Wipe Cycle* that was shown in the first exclusively video art show at the Howard Wise Gallery in 1969. Visitors to the gallery would, unbeknownst to them, be videotaped by a closed circuit surveillance camera in the elevator that brought them to the gallery. Upon entering the gallery, visitors were



Installation shot of *Wipe Cycle*

greeted by a sculpture of nine TV monitors relaying the footage in eight-second and sixteen-second delays within the gallery itself so that the visitor could see themselves across various points of time. Portable video systems afforded artists with the possibility of experimenting with an element for which they were never able to before - replaying

representations of time and space in "real" or briefly suspended time. As Bruce Kurtz observed of the *Wipe Cycle* installation, "this kind of space and time experience can only be achieved with video, and when it was first made available to people for whom television was always a medium separate from themselves (though still a controlling one), the result was a completely new awareness."<sup>9</sup>

While Nam June Paik was a pivotal trendsetter in the use of video signals and monitors as sculptural performance, many artists became critical of the inherent politics of his work. His use of footage of pop cultural figures such as Richard Nixon for example, while arguably still a critique on culture, was regarded by such contemporaries as Martha Rosler as a product that still fit within the framework of corporate television.<sup>10</sup> Artists were aware of the effects television had on a mass

<sup>9</sup> Bruce Kurtz, *Video Art: An Anthology* p. 240

<sup>10</sup> Meighs-Andrew, p. 15

cultural scale. It was a predominate source for information, a lens to the world, a marketplace for household goods and the latest trends. Television was a dangerous propaganda machine. However, it was also an extremely effective way of transmitting a message to an extremely large number of people, an economy of scale unlike the world had ever seen. There was immense possibility for artists to use the very medium of television against its inherent aims, to promote activism and alternative modes of production. It was a way of taking video art "beyond the confines of a gallery or museum, exhibition, since television is well within the means of the average person. It will return art to the people and free it from the limitations of institutional showplaces."<sup>11</sup> In a sense, Television could become a site for exchange rather than unadulterated consumption, and access to Portable Video and Video Tape Recording systems was a way to achieve this.

Collectives took shape out of these groups of video artists, some of whom first became acquainted by means of attending exhibitions of each other's work or even showing work within the same gallery. After the display of Wipe Cycle at the Howard Wise Gallery, Michael Shamberg interviewed Frank Gillette. The conversation led to further discussions around the dissemination of ideas and radical approaches towards using video for this purpose. Shortly thereafter, Gillette and Shamberg, along with several others, started Raindance, an organization whose main goal was educating the community on production, publication, and distribution of video work.<sup>12</sup> Other groups formed around the same time with similar initiatives: New York Commemation, VideoFreex, TTV, and Ant Farm. Many of these collectives fed into one another, mostly because many of these collectives

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<sup>11</sup> Ben Tatti *Video Art: An Anthology* p. 130

<sup>12</sup> Meigh-Andrews, p. 62

also took the form of communes, groups that often performed and exhibited together or hosted each other throughout their careers as they travelled from center to center. For them, portable video was also a means of documenting this way of life and having a means of archiving their performances.<sup>13</sup> It was also a convenient means of sharing equipment.

Overseas in England, John Hopkins and Sue Hall formed the Institute for Research in Art and Technology, interested in synthesizing “cinema, electronics, cybernetics, exhibitions, music, photography, printing, music, theatre, video, words and semiotics.” Sue Hall explains her first encounter with a Portapak:

“I picked [the portapak] up and asked how it worked. You don’t have to be an artist - you just have to be averagely curious. So the first video I shot was on a swing in my sitting room! That was the only form of movement I could devise. I became very curious and we talked and so the upshot of it was that we decided to work together to make a video about the squatters forming a residents association.”<sup>14</sup>

Here, Hall nicely pinpoints what became a growing trend in the use of Portapak. First, it became a new way to turn visual art into something socially relevant and actionable yet extremely simple. Second, it provided a new access point for people who wanted to be artists but either did not have the resources or struggled to fit within the limited confines of “high” art. It was a new form of expression, an art form that existed outside of a typical set of criteria such as painting and sculpture. An artistic work could explore time, motion, personal narratives, the body, the “happening” or art-of-being, or even the studio as a site of creation.

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<sup>13</sup> Meigh-Andrews, p. 65

<sup>14</sup> Meigh-Andrews, p. 66-67

This last motive is almost exactly what informed a new legion of video artists in California. In the Fall of 1970, CalArts purchased 20 Portapaks and enlisted a new legion of instructors, artists such as Allan Kaprow, Nam June Paik, and Shuya Abe.<sup>15</sup> CalArts and other schools and residencies emphasized use of portable video in exploring impulses such as those listed above. Artists like Bruce Naumann created work in his studio that explored the body within time and space, later installed as "living" sculpture and recontextualized within the gallery setting. Feminist artists were greatly attracted to the Portapak since it allowed for exploration of gender and the body in a private space where they were in charge of the definitions, free from typical male-dominated spaces like the gallery and the canons of painting and sculpture for which history had already chosen men as the creators and proprietors of the medium. Suzanne Lacy described the use of Portapak as a medium without a history such that males were not in control. It provided "instant access to body and other female experiences that was safe for us and gave us a way to display our bodies through performance."<sup>16</sup> Portable video systems provided many attractive features to artists - simple and solitary means of operating the equipment, instant or brief-delay playback, hybrid temporal-spatial forms. Whether this was the intention of Portapak from the beginning is besides the point. Artists were defining the format for themselves.

The birth of these artistic circles of production coincided with the introduction of the Portapak on the scene. Many of these ideas and motivations were already precipitating before Portapak arrived, so it was its introduction that sparked an explosion of new techniques, working environments, and aesthetic motivations. But

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<sup>15</sup> Phillips, p. 5

<sup>16</sup> Phillips, p. 155

before discussing this epochal moment any further, at this point it is necessary to stop and answer some essential questions - what exactly is Portapak and how does it work? Portapak is defined as a portable video camera with built-in microphone and electronic viewfinder, a Video Tape Recorder, and a monitor, all engineered into a battery-powered system that weighs a total of about 25 pounds, and records up to 30 minutes of video tape. Naturally, the VTR comes equipped with a shoulder strap so that it can be carried from place to place during a shoot. The most popular systems were created by Sony, JVC, Panasonic on 1/2 inch tape and Akai on 1/4 inch. The most commercially successful model was the *Videorover II* by Sony which in 1973 was selling at a rate of several thousand per month.<sup>17</sup>

The system records video signal much in the same way as Ampex systems - a camera scans the image projected through a lens onto the cathode ray tube while an electron gun scans from left to right, top-down, shooting a beam of electrons at the photoelectric surface on the other end of the cathode ray tube.<sup>18</sup> Essentially whatever is read as the image is the presence or absence of light, the electrons bound to the photoelectric surface interpreted in voltages. This process of converting the image into an electromagnetic signal is referred to as modulation.<sup>19</sup> The scan moves from left to right, alternating such that odd lines are read first, followed by even lines, a process referred to as interlacing. The combination of the odd and even scan lines forms a single interlaced frame with video signal scanning at a rate of 30 frames per second. The reason for alternating lines is to

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<sup>17</sup> Charles Bensinger and Editors of Photographic Magazine, *Petersen's Guide to Video Tape Recording* p. 52

<sup>18</sup> Videofreex, *The Spaghetti City Video Manual*, p. 4

<sup>19</sup> Videofreex, p. 10

create the illusion of persistence of vision, the human brain “filling in” the momentary blankness between frames.

Once the image has been scanned from left to right and has worked its way down the screen, the scan must return to the top of the screen to begin the next image. This is known as the vertical blanking period, or when vertical sync occurs. The image is temporary blank because in the amount of time that it takes the scanner to return to the top of the screen 15 horizontal scans could have occurred.<sup>20</sup> If the horizontal scan lines were not broken down into two components the audience would see the flicker caused by the succession of frames. The main difference between Ampex and the first Portapak system in 1969 was that the latter scanned at a rate of 480 lines as opposed to the North American and Japanese standards of 525 lines (NTSC Television standards). As of 1970, the Sony CV2100 was already able to scan at 625 lines (PAL Television standards).<sup>21</sup>

The voltage signal from the scanned lines must then be recorded onto a device that can relay this information in playback. Magnetic tape is comprised of a polyurethane base with lubricant and iron oxide particles. The electromagnetic signal is transmitted through a magnetic head that spins rapidly in a counterclockwise motion. At the same time the magnetic tape runs clockwise and diagonally against the magnetic head which arranges the iron oxide particles such that the magnetic frequency of the signals are recorded. The reason for this motion is that the counter clockwise motion ensures that as much information is read within the smallest amount of tape possible and at optimum accuracy. The diagonal motion allows for enough room on the edges to store sound and sync information

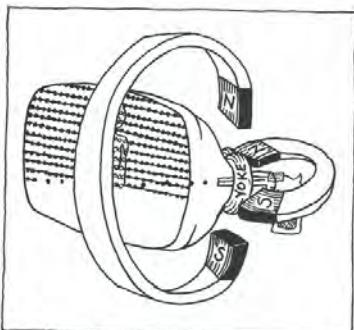
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<sup>20</sup> Videofreex, p. 15

<sup>21</sup> Meigh-Andrews, p. 69

as well as leaving enough blank room so that information is not lost due to edge damage. Once the information is recorded on tape, it is ready to be played back onto a monitor.

In playback the scanning process occurs in reverse. Sync is essential in order to maintain accurate playback. In Portapak systems, sync is maintained by the sync generator in the video camera.<sup>22</sup> The sync pulse "gives the monitor the information necessary to coordinate the lines, fields and frames that the camera has scanned."<sup>23</sup>



Artists rendering of the yoke and raster

Within the television monitor is a device called the yoke which is composed of two electromagnets made from thin copper wires wrapped around the neck of the picture tube. The sync gives the yoke the necessary information needed in order to direct the electromagnetic signals back to the surface of the picture tube known as the raster. Deflection circuits direct the amount and timing of the magnetic forces.<sup>24</sup> This process is called demodulation, the inverse of modulation.

In playing back the information, it is absolutely essential that the monitor knows the correct output signals and that horizontal and vertical drive pulses occur at the right time. Sync is what ensures that the horizontal and vertical drive pulses are in concert with each other and in the Portapak monitor is maintained by a circuit called an oscillator. The oscillator replicates the regular horizontal scan frequency of 15,750 Hz and generates this charge. The vertical sync frequency of

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<sup>22</sup> Bensinger et. al., p. 18

<sup>23</sup> Videofreex, p. 7

<sup>24</sup> Videofreex, p. 7

60 Hz, however, comes from a direct power source.<sup>25</sup> In some instances, the horizontal and vertical scan frequencies can come from the same power source which is referred to as 2:1 sync. Random interlace, often used in surveillance cameras, uses a less precise oscillator to control the exact frequency. One can test to see whether their monitor is using 2:1 or Random sync by rolling the vertical sync on the monitor control panel. If many randomly configured white lines cut across the screen rather than a clear stair-step interruption (which is basically the blanking period in visible form) than you know that it is random sync.<sup>26</sup>

Now that we have covered the essentials of video signal and video tape recording we must now turn our attention to what makes Portapak unique. First is the camera, containing a standard black and white vidicon with automatic aperture adjustments to deal with varying light levels. This feature is referred to as the Target Control Circuit.<sup>27</sup> While this feature made the Portapak camera extremely attractive in its ability to readily adjust to its surroundings, this did provide some issues with finer nuances. The camera is admittedly poor with outdoor lighting, sharp contrasts, dimensionality and depth of shadows, but is strong with daylit interiors, often times argued as being superior in quality to what most amateur film could capture in the early 70s. As Phillip Lopate states in the Vol. 2 No. 6 Issue of *Radical Software*, "the world of the afternoon is Videotape's dominion."<sup>28</sup> Images are recorded by the vidicon tube, a light-sensitive apparatus with electromagnetic clusters that respond to various levels of light. This is a vital yet sensitive device,

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<sup>25</sup> Bensinger et. al., p. 19

<sup>26</sup> Videofreex, p. 17

<sup>27</sup> Bensinger et. al., p. 57

<sup>28</sup> Phillip Lopate, "Aesthetics of the Portapak," *Radical Software* Vol. 2 No. 6, p. 19

leading many Portapak manuals to strongly caution against shooting scenes with direct sunlight. Pointing the camera directly at the sun would most assuredly permanently burn the tube.

The effects of strong light contrasts on the vidicon tube was a fetter to verite shooting style, but it was technological disadvantages such as this that appealed to the artist's impressionistic approach. Wolfgang Stoerchle, a video artist in the Southern California scene, famously used this video tube "burn" as an effect in his work,

"creating fleeting and abstracted impressions of his body that were enhanced by the camera's modest abilities to capture moving light. The effect was refined in a later work in which the artist intermittently activated a high-powered flash in a darkened room. The flash was bright enough to temporarily burn an image on the camera tube, creating what seemed to be ghostly photographs that would slowly fade back again to black."<sup>29</sup>

While these simplistic devices could often be turned to advantages, in some cases the limitations of the Portapak created stylistic tropes that were not necessarily desired. The camera also comes equipped with a built-in omnidirectional, low-impedance condenser microphone, basically meaning that volume levels cannot be controlled but can record sound from all directions and features an automatic sound level balance known as Automatic Gain Control. This would mean that if there was ever cessation in sound, the microphone levels would automatically raise which created a hissing effect. To balance this out, the user would have to make a sound in order for the microphone to once again equalize.<sup>30</sup> This also meant that there wasn't a good way to lower sound towards the end of

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<sup>29</sup> Phillips, p. 5

<sup>30</sup> Bensinger et. al., p. 66

the recording. Often times the sound of pressing the stop button would be recorded on the actual tape.<sup>31</sup>

Given the limitations in sound, light levels, and the distorted rolling effect associated with the start and stop of the VTR meant that artists working with early Portapak models were principally experimenting in the studio with a stationary camera in single takes. This was in keeping with the practices of such artists as Bruce Nauman who would work with time and space as the medium, the Portapak recording serving as a document for gallery display. William Wegman hilariously stated that you can always tell when a video was made on a Portapak given that the work concludes when the artist walks towards the camera and audibly presses stop.<sup>32</sup> However, works such as these had no narrative arc and **thad** no clear beginning, middle, or end such that they were well suited for gallery installation. Visual artists of this sentiment strengthened the use of Portapak given its adaptability to the gallery. Other artists such as Frank Gillette and Ira Schneider were interested in portable video for instant playback on the monitor. The Portapak is well-suited to created and transmitting video work in a small space such as the artist studio. Transmitting video signal across a greater distance or between spaces such as was demonstrated in *Wipe Cycle* requires greater complexity.

Playback can be achieved either through cable hook-up or a Radio Frequency (RF) signal. Direct hook-up requires a coaxial cable which contains an inner wire, known as the center conductor, that is surrounded by a braided shielding wire. The wire then connects to the UHF of the television with an 8-pin connector that splits the various channels and audio signals. The electromagnetic signal travels across

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<sup>31</sup> Phillips, p. 5

<sup>32</sup> Phillips, p. 5

this cable. As you could imagine, it requires a lot of energy to transmit this signal as the distance of the wire increases, so it is recommended that the distance between the VTR and the monitor does not exceed 50 feet. However, in examples where video signal is used for closed circuit installation this obviously poses a problem for the artist in fully realizing this installation. In this instance one must connect the cable to a line amplifier to boost the amplification of the signal such that it can travel a further distance across the cable without losing its strength.<sup>33</sup> The VTR can also transmit through RF signal but are weak in comparison and output levels cannot be controlled. With *Wipe Cycle* it is likely that Gillette and Schneider used an RF signal given that the original material is **recored** in an elevator.

Of course Portapak did experience developments over its brief existence as a popular amateur format. One of the first model's biggest drawbacks was its lack of good editing techniques, all needing to be performed in-camera. Video artist Ante Bozanich recalls differences in using pause between cuts, earlier models creating a roll in the image with each cut but later models performing a clean cut. He also recalls not being able to hold the pause for longer than 30 seconds or the VTR would jump back into forward mode.<sup>34</sup> Of course, this process speaks to an intentional edit where the artist has a shot list prepared and everything goes according to plan. Things get much more complicated when **trig** to pare down **on** an existing video or to insert new sections. David Antin defines the perils of video editing nicely, noting that video signals are built to contain an electronic pulse along the sync pulse that emits every 30 seconds. This pulse is known as the edit pulse.

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<sup>33</sup> Videofreex, 34

<sup>34</sup> Phillips p. 52

Unfortunately no such pulse exists on half-inch tape so the success of a physical edit would have to be based entirely on a happy accident.<sup>35</sup>

In their magnum opus of a handbook on video technology, the Videofreex **pay much detail** to editing processes, perhaps being the first organization or collective to put this process into writing. They recommend using two VTR systems and two monitors with an 8-pin barrel to connect. Both VTR's are set to TV mode for playback with one VTR serving the purpose of playback and the other serving as the record VTR or edit master.<sup>36</sup> Unfortunately Portapak VTR systems take a few seconds to reach optimum speed and a device known as the capstan servo, a small rotating silver post that pulls the tape through the tape path, will delay running the magnetic tape against the heads until this speed is reached by both devices and the track pulse synchronization matches.<sup>37</sup> It takes approximately 8 seconds for both systems to reach this point.<sup>38</sup> To achieve a clean edit the record VTR should be on "pause" or "still" (depending on the model). The playback VTR should be rewound to at least 10 seconds prior to the desired recording spot to achieve the proper recording speed.<sup>39</sup> Of course, as noted by Bozanich, all this must take place within approximately 30 seconds since the record VTR will jump out of pause mode.

While this is certainly an improvement on the original options in Portapak/VTR editing, there are still issues of sound. There is a small amount of space between the audio head and the video head which creates a slight delay in where

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<sup>35</sup> David Antin "Video: The Distinctive Features of the Medium" p. 181 of Schneider

<sup>36</sup> Videofreex, 52

<sup>37</sup> Videofreex, p. 41

<sup>38</sup> Unknown Author *Radical Software Vol 2: 1*

<sup>39</sup> Videofreex p. 40

the video signal and audio signal are recorded on the magnetic tape. Much in the same way as optical sound on film prints, the audio and video should be accurately matched again in playback but this causes issues in editing since some sound may be lost near the cuts.<sup>40</sup> While this is not a complete fix, there are ways of recording new sound onto a video recording without altering the corresponding image. One simply needs to set the tape to the desired spot, pull the sound dub knob to the left and place the function lever at forward while in record mode. Sound can either be recorded through the microphone on the camera, an external microphone, or off of an existing video with the use of a second VTR system. In some instances, though, a transformer or audio mixer will be needed in order to control sound levels.<sup>41</sup>

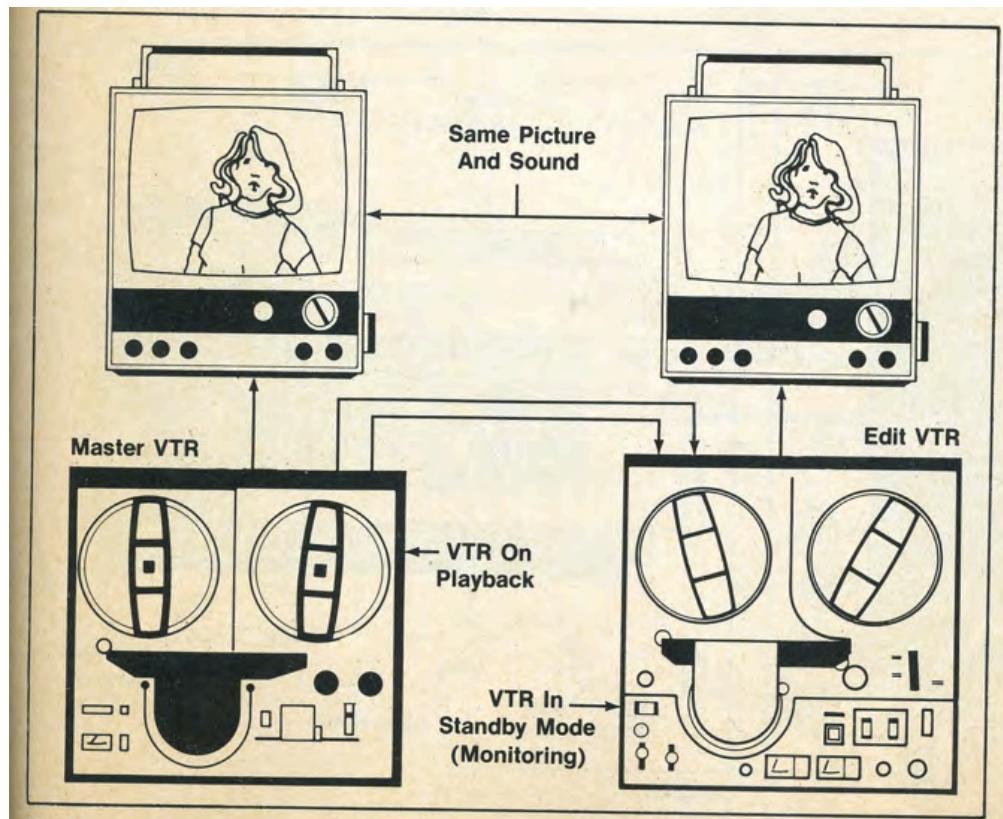


Diagram of VTR system and configuration for a dual-VTR editing set-up

<sup>40</sup> Videofree, p. 43

<sup>41</sup> Bensinger et. al., p. 56

The Portapak experienced a few improvements into the mid-70s, most remarkably the introduction of the Panasonic NV-3082 which had a built-in adapter for color picture. This later model was also lighter and could portray scenes with more refined light contrast.<sup>42</sup> By this point the trends of video artists in New York, California, and within **carious** collectives across the United States had neatly reflected the technological limits of the Portapak. Whether this was out of loyalty to the format or by sheer coincidence that Portapak offered as much as these video artists deemed necessary is up for interpretation.

As noted earlier, this new lightweight and instantly replayed device offered, according to David Cort of New York Commemoration (and later VideoFrex), a way for artists and activists to present "a more direct connection between the subject and the viewer."<sup>43</sup> It was an added plus that it was so cost-effective and endowed disenfranchised artists (namely the working class and women) a way to present their ideas within a new discourse. As Martha Rosler put it, these images were "made on the cheap out of toiler paper which, therefore, could not be judged by the normal aesthetic standards."<sup>44</sup> Furthermore, Portapak's use amongst collectives that were blurring the line between art and Electronic News Gathering saw the potential of bringing television back to the people.<sup>45</sup> Of course, eventually the practices that fit so neatly into Portapak systems were fluid and changing along with the evolving interests of the artists themselves. Eventually the aesthetics of television and video

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<sup>42</sup> Bensinger et. al., p. 58

<sup>43</sup> Meigh-Andrews, p. 64

<sup>44</sup> Phillips p. 200

<sup>45</sup> Tatti, 130

production had so greatly outgrown what Portapak could offer that this notion of cheap images outside the realm of aesthetic judgement no longer held true.

At this time another legion of video artists were also playing with portable video but were less interested in the video as performance documentation. These artists were still interested in the temporal-spatial and in the video signal as ephemeral performance/sculpture but wished to expand what visual impulses these systems could create at face value. As Lucinda Furlong put it in the article "Tracking Video Art: Image Processing as a Genre" in *Art Journal*, "Image processing, as we know it, grew out of an intensive period of experimentation that for some, in a vague way, was seen visually to subvert the system that brought the Vietnam war home every night."<sup>46</sup> This brings us back to the experiments of Nam June Paik who manipulated images from television, a transgressive reworking of a medium that many saw as propaganda. Now image processed works did not need to utilize live television feeds but could be used off of original video recordings such that artists could delve even deeper into abstraction and discovery of new impulses with their own source material.

Video synthesizers are defined by Stephen Beck as fitting into four separate categories. Camera Imaging Processing uses source material and involves colorizers, polarizers, or secondary image overlay. Direct Video Synthesis is purely abstract work, creating images off of purely signal-based impulses. Non-VTR Recordable describes Nam June Paik's work with prepared televisions. Lastly, Scan Modulating/Rescan processes use a secondary scanner that "rescans" the oscilloscope or CRT screen, the resulting image able to be manipulated by

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<sup>46</sup> Lucinda Furlong "Tracking Video art: Image processing as genre" *Art Journal*, in *A History of Video Art*, Meigh-Andrews p. 117

electromagnetic deflection.<sup>47</sup> One of the more ingenious “add-ons” was the Rutt-Etra Scan Processor, a device that could be used on any video signal but was commonly used on Portapak work. With the Rutt-Etra Scan Processor, the necessary components were a video input (e.g. the Portapak original), the synthesizer (which could be a display control unit or a modulate rack and display), a rescan camera, and a colorizer.<sup>48</sup> The synthesizer and display records the image source through a monochrome vidicon camera and shortens, lengthens, or generally manipulates the scan lines which at this point have been reduced to an image with less depth. However, these new re-scanned lines are much more striated. As with video signal which requires a drive pulse to moti<sup>49</sup>e the cathode ray gun, the scan requires a specific and constant voltage level to keep everything in sync and to ensure that the resulting image is accurate.

With the Scan Processor, the voltage of the scan lines can be raised or lowered using the Bias Control on the display module. The Bias Control raises or lowers the amplitude of the horizontal or vertical sweep of the image (either -10V or +10V) such that the scan lines are not completely at a zero-degree horizontal but are nonetheless parallel to each other.<sup>49</sup> This results in a textured, cartographic image that creates the illusion of three-dimensionality.<sup>50</sup> Depth Control works in a similar way, causing the image to advance out of or recede into blankness. This image, however, will always be monochrome and needs to be recorded again in order to capture the rescanned

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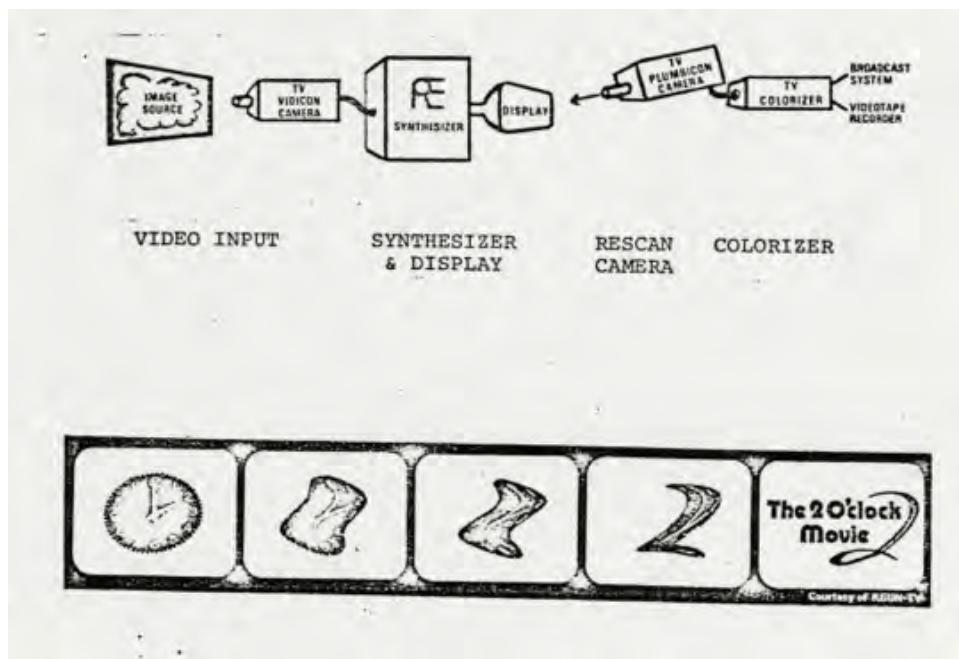
<sup>47</sup> Meigh-Andrews, p. 120-121

<sup>48</sup> Rutt-Etra, *RE Video Synthesizer Systems* p. 3

<sup>49</sup> Rutt-Etra p. 7

<sup>50</sup> Marita Sturken, *Video Art: An Anthology*, p. 38

display image. In rerecording the image, the rescan camera has an attached colorizer which can solarize or posterize the image, thus the image will never be "as is" but can still have vibrancy.<sup>51</sup>



Processes such as this were extremely attractive to artists like Woody and Steina Vasulka who created an entire body of moving image work employing abstraction. An example of a Portapak work which was later manipulated with the Scan Processor is *Reminiscence*, the result of a Portapak walk through a farmhouse in Moravia.<sup>52</sup> The camera moves through a bizarre cavernous setting, accompanied only by the sound of footsteps. Occasionally, small bulbous forms will dart across the bottom of the frame followed by the sound of a squeaking animal. The viewer then deduces that this is a room full of mice. The Rutt-Etra processor transforms a

<sup>51</sup> Rutt-Etra p. 4

<sup>52</sup> <http://www.eai.org/title.htm?id=13754>

work that required the use of a modest and portable VTR system into something more gestural and other-worldly.

According to Woody Vasulka, the Rutt/Etra processor "had placed the instrument much closer to the hands of individual artists for the right price...its power was in the transformation of the traditional film frame into an object with lost boundaries, to float in an undefined space of lost identity: no longer the window to "the" reality, no longer the truth."<sup>53</sup> This movement of artists were clearly much more interested in exploring the cause-and-effects of aesthetics as related to what was then the most convenient and cheapest means to accomplish it. It is inconsequential that the original Portapak video had little control over light levels or image rolling because these artists were after an embellishment to the image, something more painterly. The Portapak just happened to be one way of generating the source material that was then processed into something almost virtually unrecognizable from the original. Of course, for these aesthetics pioneers fueled by curiosity of how to play with video signal it was never satisfying to attach oneself to one medium for too long.

By the mid-70s, loyalty to the Portapak was waning, for a number of reasons. The first was a perceived political inertness of the medium. As argued in a manifesto of sorts in a 1972 issue of *Radical Software*, the uncredited author states

"We have gone through the freakout, self indulgent, magic trip with the portapak which for all of its excitement and stimulation, has left us somewhat cynical about our effectiveness. We see how this tool can serve the master even more efficiently than the masses...We believe that the video movement will not affect any change within our society without a collective politic. We must consider ourselves warriors in a battle waged against those who have sought to control that which belong to us all -- information."<sup>54</sup>

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<sup>53</sup> David Dunn, *Ars Electronica* David Dunn, from Meigh-Andrews p. 123

<sup>54</sup> Unknown Author, *Radical Software Vol 2*: 4

Much of this discontent can be credited to Portapak's use in corporate television and especially in surveillance technology. The Portapak had morphed away from an artist-activist's dream machine to the tool of the state.

While this is hardly a representation of how all Portapak users felt, it is worth mentioning that the Portapak was both becoming less attractive politically to artists as well as functionally. Editing was less than ideal and its portability was accompanied by further drawbacks. Petersen's Guide to Video Tape Recording notes that it is best to run a test reel through the Portapak before every recording or playback in order to avoid threading issues, though this was somewhat improved with later models such as the Panasonic NV-3082.<sup>55</sup> Nonetheless, this piecemeal process of improving upon the Portapak's drawbacks led to an exponential growth in makes and models, these later models varying in their technical properties so much that the "Portapak" as a system was gradually meaning less and less.

Portapak's exit from the scene is hard to track. Systems are still available for sale online, though these would likely be more for memorabilia sake as playback technology for Portapak has long been obsolete. Lauren Sorenson, Preservation Specialist at the Bay Area Video Coalition states that 1/2 inch open reel tape is never used as a preservation format anymore, though technology such as Linear Tape-Open offers a unique means of storing this material.<sup>56</sup> Developed in the 1990s by Hewlett-Packard, IBM, and Seagate, this magnetic tape system stores works from 1/2 in open reel as digital files in XML which are thought to have an archival life of 30 years.<sup>57</sup> On this note, it is also difficult to say at what point it was sensed

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<sup>55</sup> Bensinger et. al., p. 58

<sup>56</sup> Lauren Sorenson, e-mail with the expert, 10/11/12

<sup>57</sup> HP Ultrium Media "Quick Specs"

that a better archival medium was needed for analog video tape, but it is clear that Portapak was simply not it. The playback media was very tenuous and prone to jamming and the tape itself was vulnerable due to lack of secure housing. Models such as the U-Matic, BetaMax and other encased 1/2" and 3/4" tape were already on the scene as early as 1972 and commonly used in *Electro- New Gathering*, a circle that often blended with time-based media artists.<sup>58</sup> These enclosed tape cassettes offered advantages over the open reels, particularly the ease with which one could load the cassette into the VTR and especially the ease of maintenance, or lack thereof.

While the parallel histories of artist-activists and Portapak was uncanny, it was clearly not a loyal relationship. This is not to say that time-based media artists were fickle or apolitical toward the Portapak as a form of expression, but rather their sensibilities towards using video art favored increasingly cheaper and aesthetically advanced VTR systems. As we are seeing more and more in our digital visual culture, it is becoming exponentially easier for the average person to create an aesthetically rich and sophisticated moving image document with a cheap and portable object - the cell phone being a most recent example.

It would appear that the sensibilities of the Portapak were a starting point for an ironically capitalist mentality in approaching moving image technology - the upheaval of the average citizen to the status of artist, broadening the demand for everyday video technology to achieve this need. While 8 mm and amateur film gauges were the first example of the homemade-filmmaker, the Portapak was the first format to instill a desire for instant gratification. Early video artists were attracted to this feature for its use in ephemeral sculpture and performance, but

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<sup>58</sup> Shapiro, Mark

gradually the appetite for improved aesthetics and functionality trumped what the Portapak alone could offer. While there were certainly factions that aligned their political aims with the Portapak as a revolutionary tool and maintained some degree of loyalty to it, namely in Electronic News Gathering, market trends and playback operability left behind 1/2" open reel. This is an oft told story, and surely Portapak is just another example. However, it is rare that such a dominant format, that of early VTR and later camcorder technology, was first taken on by such a niche community who forever redefined our relationship with the moving image.

## Annotated Bibliography

Bensinger, Charles and the Editors of Photographic Magazine "Portable Video Systems" *Petersen's Guide to Video Tape Recording*, Petersen Publishing Company (1973)

This magazine/user guide from 1973 explains the components of Portapak systems, playback, audio dubbing, and camera techniques in terms that are easy to understand. While this is a text that comes slightly after the wave of many video artists using Portapak, it is useful both in clearly documenting the processes and also marks a shift from the niche market of video artists to the broader use of portapak by community organizers and educators.

Etra, Bill & Rutt, Steve (1973). *RE Video Synthesizer Systems: Models RE4-A and RE4-B*

<http://www.fondation-langlois.org/html/e/docnum.php?NumEnregDoc=d00016290>

Starting in the 1970s video artists that were now well acquainted with the portapak and open-reel video tape were learning more about how to work with video signals in new ways. Steina and Woody Vasulka were perhaps the most established artists working with scan processing following discoveries by Bill Etra and Steve Rutt. "Video Synthesizer Systems" is a user manual for working with signals from portable video systems to create new effects with electromagnetic deflection and scanning. As video artists were improving upon their (and perhaps responding to a demand for) aesthetics, video synthesizers allowed them to continue to work on portapak while still using cutting edge technology to advance the form (e.g. *Reminiscence* Steina and Woody Vasulka).

HP Ultrium Media, "Quick Specs"

<http://www.ccidistribution.co.uk/datasheets/2010/apr/LTO.pdf>

This manual provides some basic information on Linear Tape-Open, the current preferred storage format for works originally recorded on 1/2" open reel.

Korot, Beryl and Schneider, Ira, ed. (1975) *Video Art: An Anthology*, Harcourt Brace Jovanovich, New York and London

This collection of treatises, diagrams, and working vocabularies by video artists nicely diagrams the sentimentality towards video-making and provides a window into the minds of those that chose to work with portapak and why. Entries by Hermine Freed, Bruce Kurtz, Ben Tatti, David Antin, and Marita Sturken are extremely telling of the ideologies of portable video artists and how the technical process of the devise melded with their theoretical practice in artmaking.

Lopate, Phillip (1972-74) *Radical Software* Vol. 2: 6 and Unknown Authors Vol. 2: 1, 4

Radical Software was a magazine that started shortly after the advent of low-cost portable video technology and focused on its use amongst artists and community organizers. Throughout their four-year eleven-issue publication run (now all digitized and made available online) they published articles on camera techniques, classroom exercises for playing with the technology, tips on simple repairs, the aesthetic advantages of the format, reports on portable video use in various studies and public initiatives, and even made predictions as to the eventual downfall of the media by virtue of corporate use. I will be using multiple snippets from 3 different articles which cover the diverse perspectives on how portapak can be used and its function as a political tool.

[http://www.radicalsoftware.org/volume2nr4/pdf/VOLUME2NR4\\_0003.pdf](http://www.radicalsoftware.org/volume2nr4/pdf/VOLUME2NR4_0003.pdf)

[http://www.radicalsoftware.org/volume2nr6/pdf/VOLUME2NR6\\_art09.pdf](http://www.radicalsoftware.org/volume2nr6/pdf/VOLUME2NR6_art09.pdf)

[http://www.radicalsoftware.org/volume2nr1/pdf/VOLUME2NR1\\_art16.pdf](http://www.radicalsoftware.org/volume2nr1/pdf/VOLUME2NR1_art16.pdf)

Meigh-Andrews, Chris (2006). *A History of Video Art: The Development of Form and Function*, Berg Publishers, Oxford and New York

Chronicling artist video from both a technical and theoretical perspective, this text pinpoints portapak as the locus for temporal-spatial practice in video-making. This book also nicely charts the precedents leading into Nam June Paik's fabled portapak screening at the Cafe-a-go-go in 1965 and the legions of video artists that soon surfaced. Primary sources from this book include entries by Douglas Davis, Wolf Vostell, Lucinda Furlong, and David Dunn.

Phillip, Glenn (2008). California Video: Artists and Histories, Getty Research Institute

Focusing on the portapak's use within art circles at the National Center for Experiment in Television, CalArts, UCLA, and UC Berkeley, this exhibition catalogue discusses experiments in the aesthetic advantages of Portapak (ironically as a result of its limitations), its use in the classroom, and the stark schism between performance-based video artists and video "painters." Interviews with Howard Fried, Suzanne Lacy, Wolfgang Stoerchle, William Wegman, Ante Bozanich, and Martha Rosler all tell the story of the Portpak through the eyes of the artists who employed it.

Report of the Librarian of Congress "A Report on the Current State of American Television and Video Preservation" October 1997

<http://www.loc.gov/film/tvstudy.html>

Shapiro, Mark *The History of Camcorders* March 24, 2010  
[http://www.internetvideomag.com/Articles-2006/112706\\_historyofcamcorders.htm](http://www.internetvideomag.com/Articles-2006/112706_historyofcamcorders.htm)

This article puts the Portapak in the context of later video formats such as U-Matic, BetaMax, and VHS.

Sorenson, Lauren (BAVC), e-mail interview (10/11/12)

An archivist speaks to me on the issues of preserving 1/2" open reel and what ultimately is the only answer.

Videofreex (1973). *The Spaghetti City Video Manual*, Preager Publishers, New York and Washington

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Nam June Paik prepared television  
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